



INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P4099		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/FI 03/00601	International filing date (day/month/year) 12.08.2003	Priority date (day/month/year) 13.08.2002	
International Patent Classification (IPC) or both national classification and IPC A01G13/02			
Applicant AHLSTROM RESEARCH AND SERVICES et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 10.03.2004		Date of completion of this report 18.10.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Lucchesi-Palli, C Telephone No. +49 89 2399-2093 	

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I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-12 as originally filed

Claims, Numbers

1-18 received on 27.04.2004 with letter of 24.04.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
 - ☐ the language of publication of the international application (under Rule 48.3(b)).
 - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority in written form.
 - ☐ furnished subsequently to this Authority in computer readable form.
 - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
4. The amendments have resulted in the cancellation of:
- ☐ the description, pages:
 - ☐ the claims, Nos.:
 - ☐ the drawings, sheets:
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1 - 18
	No: Claims	
Inventive step (IS)	Yes: Claims	1 - 18
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1 - 18
	No: Claims	

2. Citations and explanations

see separate sheet

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ad section V:

Claims 1 to 18 meet the requirements of article 33(2),(3) PCT:

The closest prior art is considered to be the document D1, EP-A-0454 104, the description page 2, line 51 to Page 3, line 31, disclosing a biodegradable fibrous support suitable for mulching of the soil, which is coated with an aqueous solution comprising biodegradable natural latex (obviously obtained from Hevea, as this is the main source for natural latex), the amount falling in the claimed ranges, the balance to 100% includes water and additives such as soy bean protein. D1 does neither specify the amount of dry matter of latex of the coating nor the addition of preservative agents of the latex as claimed in present claim 1.

The problem to be solved by the present application is to provide a support as known from D1 which resists during the relatively long term growing period but which is biodegradable within a time limit as short as possible after having been used as a mulching support.

By adding preservative agents of latex the degradation of the latex by microorganism can be avoided for a certain time.

There is no indication in the prior art which would prompt the man skilled in the art to add preservative agents of the latex to make the mulch more durable.

D2, FR-A-2 813 888 discloses a composition comprising natural latex, minerals, thickening agents and water. This composition is applied directly on the soil and not on a fibrous support as claimed. D3, US-A-5 163 247 discloses an agricultural mulch made from a fibrous web coated with latex which is however not biodegradable. Neither D2 nor D3 relate to the above mentioned problem and give no teaching on how to make biodegradable latex more resistant.

Dependent claims 2 to 17 refer to particular embodiments of the invention claimed in claim 1 and meet the requirements set in the PCT.

The industrial applicability in the field of support for mulching is evident (Article 33(4) PCT).

Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT,

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which in the present case would be appropriate, with those features known in combination from the prior art (document D1, see above) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

The description is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT.

CLAIMS

1. A biodegradable fibrous support for mulching of the soil for long-term growing periods of up to 36 months, characterized in that the fibrous support is coated with an aqueous solution comprising from 5 to 50% by weight of biodegradable natural latex obtained from the rubber tree, the balance to 100% including water, and stabilizing and preservative agents of said latex, the solution forming, on the support, a coating of 10 to 200 g/m² as dry matter of latex, advantageously from 90 to 100 g/m², said preservative agents being chosen from the group comprising animal or vegetable proteins, such as glycerin; or chitosan, or tannins or indigo by themselves or as a mixture.
2. A support according to Claim 1, characterized in that said natural latex is prevulcanized.
3. A support according to Claim 1, characterized in that the natural latex is obtained from Hevea Brasiliensis and has a dry rubber concentration of at least of 60%.
4. A support according to Claim 1, characterized in that the stabilizing agents are chosen from the group comprising the vegetable proteins, such as casein, tannins or indigo or soy protein or glycerin; or the mineral fillers, such as talc or calcium carbonate; by themselves or as a mixture.
5. A support according to Claim 1, characterized in that the coating solution consists, by weight, of:
- from 5 to 50%, biodegradable natural latex obtained from the rubber tree,
 - from 1 to 20%, proteins,
 - from 0 to 20%, talc,
 - from 1 to 20 % of chitosan, and/or indigo, and/or glycerin, and/or tannins,
 - the balance to 100 % consisting of water.

6. A support according to Claim 1, **characterized** in that it contains thermo-bonding fibres representing from 5 to 50%, advantageously between 10 and 15%, by weight, of the support.
- 5 7. A support according to Claim 6, **characterized** in that the thermo bonding fibres are exclusively composed of polylactic acid fibres.
- 10 8. A support according to Claim 1, **characterized** in that it is provided with a grid, which is either maintained on the whole or part of at least one face of the support, or incorporated into the whole or part of the mass of the support, said grid being produced of a biodegradable polymers chosen from the group comprising polylactic acid, polycaprolactone, viscose, modified viscose, polyhydroxybutyrate and polyhydroxyalcanoate, by themselves or as a mixture.
- 15 9. A support according to Claim 8, **characterized** in that the grid is made exclusively of modified viscose threads.
- 20 10. A support according to Claim 8, **characterized** in that the weight of the grid is between 10 and 50 g/m², advantageously in the order of 20 g/m².
- 25 11. A support according to Claim 8, **characterized** in that the grid is positioned exclusively in the area of the fixing points of the support on the ground.
- 30 12. A support according to Claim 8, **characterized** in that the grid is glued directly on the surface of the fibrous support by means of a water-resistant biodegradable glue chosen from the group comprising ethylene polyvinyl alcohol (EVOH) and polyvinyl alcohol (PVA), by themselves or as a mixture, the glue representing between 5 and 50%, advantageously 15 %, by weight of the grid.
13. A support according to Claim 8, **characterized** in that the grid is unrolled directly on the fibrous support during its manufacture.

14. A support according to Claim 1, **characterized** in that it contains a hydrophobic resin representing from 0,5 to 15% by weight of the support, chosen from the group comprising urea-formaldehyde resins, melamine-formaldehyde resins, polyamide-amine-epichlorhydrin resins, polyethyleneimine resins, starch derivatives, by themselves or as a mixture.
15. A support according to Claim 1, **characterized** in that it contains carbon black representing from 0,5 to 4% by weight of the support.
16. A support according to Claim 1, **characterized** in that the fibre composition of the support is as follows:
- from 40 to 100%, advantageously from 70 to 90%, by weight of coniferous unbleached or bleached kraft fibres;
 - from 0 to 60%, advantageously from 10 to 30%, by weight of deciduous unbleached or bleached kraft fibres.
17. Support according to Claim 1, **characterized** in that the fibre composition of the support is as follows:
- from 80 to 100% by weight of annual plant fibres,
 - from 0 to 20% by weight of coniferous unbleached or bleached kraft fibres.
18. Support according to Claim 1, **characterized** in that the fibre composition of the support is as follows:
- from 20 to 100% by weight of coniferous bleached kraft fibres,
 - from 0 to 40% by weight of annual plant fibres,
 - from 0 to 40% by weight of rayon fibres.